

CLAIMS

1. A line transition including a solid waveguide and a planar circuit to realize planar-circuit to waveguide transition, the solid waveguide propagating electromagnetic waves within a three-dimensional space, the planar circuit being constructed by forming a predetermined conductive pattern on a dielectric substrate, wherein

the dielectric substrate is disposed parallel to the E plane of the solid waveguide in almost the middle of the solid waveguide,

the conductive pattern on the dielectric substrate includes a coupled-line pattern segment electromagnetically coupled with a signal propagating through the solid waveguide and a transmission-line pattern segment extending from the coupled-line pattern segment, and

the edge of the dielectric substrate has a notch in the vicinity of the coupled-line pattern segment, the notch having a side that is parallel to the signal propagation direction of the coupled-line pattern segment, the length of the side being equal to or longer than the dimension in the width direction of the E plane of the solid waveguide.

2. A high frequency module including the line transition according to Claim 1.

3. A method for manufacturing a line transition including a solid waveguide and a planar circuit to realize planar-

circuit to waveguide transition, the solid waveguide propagating electromagnetic waves within a three-dimensional space, the planar circuit being constructed by forming a predetermined conductive pattern on a dielectric substrate, the dielectric substrate being disposed parallel to the E plane of the solid waveguide in almost the middle of the solid waveguide, the conductive pattern on the dielectric substrate including a coupled-line pattern segment electromagnetically coupled with a signal propagating through the solid waveguide and a transmission-line pattern segment extending from the coupled-line pattern segment, the edge of the dielectric substrate having a notch in the vicinity of the coupled-line pattern segment, the notch having a side that is parallel to the signal propagation direction of the coupled-line pattern segment, the length of the side being equal to or longer than the dimension in the width direction of the E plane of the solid waveguide, the method comprising the steps of:

forming a plurality of the conductive patterns and through holes in a ceramic green sheet serving as a motherboard such that each through hole is arranged in the vicinity of the corresponding line-coupled pattern segment at a predetermined spacing;

firing the motherboard; and

cutting the fired motherboard along lines passing

through the through holes such that each through hole in the fired motherboard serves as the notch.